

10/566218

**PATENT APPLICATION**

**Docket No. 12477/10**

**IN THE UNITED STATES PATENT AND TRADEMARK OFFICE** 27 JAN 2006

APPLICANTS : Masahiro YAMASHITA, et al.  
SERIAL NO. : (Natl. Phase of PCT/JP2004/010807)  
FILED : (Herewith)  
FOR : ELECTROLYTE MEMBRANE-ELECTRODE  
ASSEMBLY, FUEL CELL USING THE SAME, AND  
METHOD FOR PRODUCING ELECTROLYTE  
MEMBRANE-ELECTRODE ASSEMBLY  
  
GROUP ART UNIT : (Unassigned)  
Examiner : (Unassigned)

**INFORMATION DISCLOSURE STATEMENT**

COMMISSIONER FOR PATENTS  
Customer Service Window  
Randolph Bldg.  
401 Dulany Street  
Alexandria, VA 22314

Sir:

Pursuant to 37 CFR § 1.56, the attention of the Patent and Trademark Office is hereby directed to the reference(s) listed on the attached PTO-1449. Unless otherwise indicated herein, one copy of each reference is attached. It is respectfully requested that the information be expressly considered during the prosecution of this application, and that the reference(s) be made of record therein and appear among the "References Cited" on any patent to issue therefrom. The filing of this Information Disclosure Statement and the enclosed PTO Form No. 1449, shall not be construed as an admission that the information cited is prior art, or is considered to be material to patentability as defined in 37 C.F.R. § 1.56(b). The paragraphs marked below are applicable. It is believed that no fees other than those indicated below are due, but authorization is hereby given to charge any additional fees due, or to credit any overpayment, to deposit account 11-0600.

☒ 1. This Information Disclosure Statement is being filed (a) within three months of the filing date of a national application other than a continued prosecution application under 37 C.F.R. §1.53(d), (b) within three months of the date of entry of the national stage as set forth in 37 C.F.R. § 1.491 in an international application, (c) before the mailing date of a first Office Action on the merits in the present application, OR (d) before the mailing of a first office action after filing of a request for continued examination. No certification or fee is required.

☐ 2. This Information Disclosure Statement is being filed more than three months after the U.S. filing date AND after the mailing date of the first Office Action

on the merits, but before the mailing date of a final action, Notice of Allowance, or any action that otherwise closes prosecution.

☐ a. I hereby certify that each item of information contained in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement. 37 CFR §1.97(e)(1).

☐ b. I hereby certify that no item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to my knowledge after making reasonable inquiry, no item of information contained in the Information Disclosure Statement was known to any individual designated in 37 CFR §1.56(c) more than three months prior to the filing of this Information Disclosure Statement. 37 CFR §1.97(e)(2).

☐ c. Please debit Deposit Account No. 11-0600 in the amount of \$180.00 in payment of the fee under 37 CFR §1.17(p) to ensure consideration of the disclosed information. Two duplicate copies of this paper are attached. 37 CFR §1.97(c)(2).

☐ 3. This Information Disclosure Statement is being filed after the mailing date of a final action, Notice of Allowance or an action that otherwise closes prosecution, but before payment of the Issue Fee. Applicant(s) hereby request(s) that the Information Disclosure Statement be considered. Please debit Deposit Account No. 11-0600 in the amount of \$180.00 in payment of the petition fee under 37 CFR §1.17(p) to ensure consideration of the disclosed information. Two duplicate copies of this paper are attached.

☐ a. I hereby certify that each item of information contained in this Information Disclosure Statement was first cited in any communication from a foreign patent office in a counterpart foreign application not more than three months prior to the filing of this Information Disclosure Statement. 37 CFR §1.97(e)(1).

☐ b. I hereby certify that no item of information contained in this Information Disclosure Statement was cited in a communication from a foreign patent office in a counterpart foreign application and, to my knowledge after making reasonable inquiry, no item contained in the Information Disclosure Statement was known to any individual designated in 37 CFR §1.56(c) more than three months prior to the filing of this Information Disclosure Statement. 37 CFR §1.97(e)(2).

☐ 4. Relevance of the non-English language reference(s) is discussed in the present specification.

☐ 5. The reference(s) was/were cited in a counterpart foreign application. An English language version of the foreign search report is attached for the Examiner's information.

☐ 6. A concise explanation of the relevance of the non-English language reference(s) appears in the Appendix attached hereto.

☐ 7. The Examiner's attention is directed to co-pending U.S. Patent Application No. \_\_\_\_\_, filed \_\_\_\_\_, which is directed to related technical subject matter. The identification of this U.S. Patent Application is not to be construed as a waiver of secrecy as to that application now or upon issuance of the present application as a patent. The Examiner is respectfully requested to consider the cited application and the art cited therein during examination of the present application.

☐ 8. This application is one of a series of related applications, identified in the attached Appendix, which are directed to related technical subject matter. The identification of those U.S. Patent Applications is not to be construed as a waiver of secrecy as to those applications now or upon issuance of the present application as a patent. The Examiner is respectfully requested to consider the cited applications and the art cited therein during the examination.

☐ 9. The reference(s) was/were cited by or submitted to the Office in parent application No. \_\_\_\_\_ filed \_\_\_\_\_, which is relied upon for an earlier filing date under 35 U.S.C. §120. Thus, copies of these references are not attached. 37 CFR §1.98(d).

☒ 10. English-language Abstracts are attached to the non-English language references.

☒ 11. No copies of U.S. references are required.

☒ 12. Other: Ten of the references were cited in the International Search Report, a copy of which is enclosed.

Respectfully submitted,

Date: 27 January 2006

King L. Wong (Reg. No. 37,500) for  
Cassandra T. Swain, Ph.D.  
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Substitute for form 1449A/PTO

# **INFORMATION DISCLOSURE STATEMENT BY APPLICANT**

(Use as many sheets as necessary)

Sheet 1 of 2

## **Complete if Known**

Application Number	(Natl. phase of PCT/JP04/010807)
Filing Date	(Here with) <b>10/566218</b>
First Named Inventor	Masahiro YAMASHITA
Art Unit	(Unassigned)
Examiner Name	(Unassigned)
Attorney Docket Number	12477/10

## **U.S. PATENT DOCUMENTS**

Examiner Initials *	Cite No. <sup>1</sup>	Document Number	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear
		Number - Kind Code <sup>2</sup> (if known)			
	1	US-5,834,566	11/10/98	HELMER-METZMANN et al.	
	2	US-5,989,742	11/23/99	CABASSO et al.	
	3	US-2002/0091225A1	07/11/02	MCGRATH et al.	= WO02/25764

## **FOREIGN PATENT DOCUMENTS**

Examiner Initials *	Cite No. <sup>1</sup>	Foreign Patent Document	Publication Date MM-DD-YYYY	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages or Relevant Figures Appear	T <sup>6</sup>
		Country Code <sup>3</sup> - Number <sup>4</sup> - Kind Code <sup>5</sup> (if known)				
	1	WO 99/10165	03/04/99	FOSTER-MILLER, INC.		
	2	WO 02/25764	03/28/02	VIRGINIA TECH INTELLECTUAL PROPERTIES, INC.		
	3	WO 00/15691	03/23/00	VICTREX MFG. LTD.		
	4	JP 06-093114	04/05/94	HOECHST AG		
	5	JP 2-884189	02/12/99	KONISHI CHEMICAL IND CO, LTD.		
	6	JP 2003-217343	07/31/03	TOYOBO CO LTD		
	7	JP 2003-217342	07/31/03	TOYOBO CO LTD.		
	8	JP 08-020716 A	01/23/96	HOECHST AG		
	9	JP 2002-524631A	08/06/02	VICTREX MFG. LTD		
	10	JP 2001-514431A1	09/11/01	FOSTER-MILLER, INC.		
	11	JP 2002-502539A1	01/22/02	THE RESEARCH FOUNDATION OF THE STATE UNIV. OF NY		
	12	JP 11-067224A	03/09/99	ASAHI CHEM. IND CO, LTD.		
	13	JP 11-007969A	01/12/99	ASAHI CHEM. IND CO. LTD.		
	14	JP 2004-149779A	05/27/04	TOYOBO CO., LTD.		
	15	JP 07-268114A	10/17/95	ASAHI GLASS CO., LTD.		
	16	JP 01-129023A	05/22/89	TOSOH CORP.		

Examiner Signature

Date Considered

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. <sup>1</sup> Applicant's unique citation designation number (optional). <sup>2</sup> See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup> Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup> For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup> Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST. 16 if possible. <sup>6</sup> Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, U.S. Department of Commerce, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450. #597726



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**INFORMATION DISCLOSURE  
STATEMENT BY APPLICANT**

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Sheet

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of

2

**Complete if Known**

Application Number

(Natl. Phase of PCT/JP04/010807)

Filing Date

(Here With)

First Named Inventor

Masahiro YAMASHITA

Group Art Unit

(Unassigned)

Examiner Name

(Unassigned)

Attorney Docket Number

12477/10

**OTHER PRIOR ART -- NON PATENT LITERATURE DOCUMENTS**

Examiner Initials *	Cite No. <sup>1</sup>	Include name of the author (in CAPITAL LETTERS), title of the article (when appropriate), title of the item (book, magazine, journal, serial, symposium, catalog, etc.), date, page(s), volume-issue number(s), publisher, city and/or country where published.	T <sup>2</sup>
	1	"Partially sulfonated poly(arylene ether sulfone) – A versatile proton conducting membrane material for modern energy conversion technologies", R. Nolte et al., Journal of Membrane Science, 83, 1993, pp. 211-220	
	2	"Proton conducting composite membranes from polyether ether ketone and heteropolyacids for fuel cell applications", S.M.J> Zaidi et al., Journal of Membrane Science, 173, 2000, pp. 17-34	
	3	"Proton-conducting polymers derived from poly(ether-etherketone) and poly(4-phenoxybenzoyl-1, 4-phenylene)", Takeshi Kobayashi et al., Solid State Ionics 106, 1998, pp. 219-225	
	4	"Polyaromatic Ether-Ketone Sulfonamides Prepared from Polydiphenyl Ether-Ketones by Chlorosulfonation and Treatment with Secondary Amines", Jasun Lee et al., Journal of Polymer Science: Polymer Chemistry Edition, Vol. 22, 1984, pp. 295-301	
	5	"Synthesis and Characterization of Sulfonated Poly(arylene Ether Sulfones)", B.C. Johnson et al., Journal of Polymer Science: Polymer Chemistry Edition, Vol. 22, 1984, pp. 721-737	
	6	"Polyaromatic Ether-Ketones and Ether-Keto-Sulfones Having Various Hydrophilic Groups", Takeshi Ogawa et al., Journal of Polymer Science: Polymer Chemistry Edition, Vol. 23, 1985, pp. 1231-1241	
	7	"Direct Methanol Fuel Cell Performance Using Sulfonated Poly(arylene ether sulfone) Random Copolymers as Electrolytes", B.S. Pivovar et al., AIChE, Fuel Cell Technology: Opportunities and challenges, 2002, pp. 535-542	
	8	"Chemical Structure and Morphological considerations for Designing Direct Methanol Fuel Cell Proton Exchange membranes", M. Hickner and J.E. McGrath, The Electrochemical Society 203 <sup>rd</sup> Meeting Paris, 2003, Abs., Abstract No. 1169	
	9	"Synthesis and Characterization of Controlled Molecular Weight Sulfonated Aminofunctional Poly(Arylene Ether Sulfone)s prepared by Direct Polymerization", J. Mecham et al., Polymer Preprints 2000, 41(2), pp. 1388-1389	
Examiner Signature		Date Considered	

\*EXAMINER: Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.<sup>1</sup> Unique citation designation number.